



Air Quality Permitting Technical Memorandum

March 14, 2003

Tier II Operating Permit No. 001-00049

**KOCH MATERIALS CO
BOISE, IDAHO**

Project No. T2-020009

Prepared by:

*Robert Baldwin
Permit Writer*

FINAL PERMIT

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LIST OF ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CO	carbon monoxide
CFR	Code of Federal Regulations
DEQ	Department of Environmental Quality
EPA	United States Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	Idaho Administrative Procedures Act
MACT	Maximum Available Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter of 10 micrometers or less
PSD	Prevention of Significant Deterioration
SIP	State Implementation Plan
SM	Synthetic Minor
SO ₂	sulfur dioxide
T/yr	tons per year
VOC	volatile organic compound

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.404.04, *Rules for the Control of Air Pollution in Idaho*, for Tier II operating permits.

PROJECT DESCRIPTION

This project is for the renewal of Tier II Operating Permit No. 001-00049, for Koch Materials Co. located in Boise. The emissions sources at the facility consist of the following: several storage tanks, loading racks, two natural gas-fired boilers, and a hot-oil heater.

FACILITY DESCRIPTION

Asphalt cement is delivered to the facility via railroad cars. The asphalt cement is stored and mixed with other agents to the specifications. The finished product is then shipped via trucks. Steam from the boilers is used to heat the asphalt cement so that it can be pumped into the storage tanks. The hot-oil heater is used to keep the contents in various tanks warm so they can be pumped into trucks for shipment. The facility has added several large storage tanks since the issuance of the facility's first Tier II permit. These new storage tanks are addressed in the permit. Fugitive emission sources found at the facility are pumps, valves, fittings, paved, and unpaved roads.

SUMMARY OF EVENTS

March 14, 2002	DEQ received an application for a Tier II operating permit from Koch Materials.
April 2, 2002	DEQ began processing the application.
May 14, 2002	The application was declared complete.
September 11, 2002	A facility draft permit was issued for review.
September 24, 2002	Comments were received from the facility.
January 22 – February 24, 2003	Public Comment period held
January 23, 2003	Comments were received from the facility from public comment period.

DISCUSSION

1. Emission Estimates

Emissions from the facility are primarily generated from storage tanks, loading racks, boilers, and a hot-oil heater. The emissions in this permit include emissions from the new large storage tanks that were built since the issuance of the April 4, 1997, Tier II permit.

The emissions from the storage tanks were estimated using the Tanks program for storage tanks. The emissions from the two boilers and the hot-oil heater were estimated using AP-42 emission factors. The estimated emissions were based on the annual throughputs stated in Table 1 of Appendix A. These throughput amounts declared in the Tier II application are included as permit limits. The permittee is required to demonstrate compliance with the permitted emission limits by monitoring and recording the amount of each material handled annually.

There was some interest in the emissions from the acids used by Koch Materials in their production process. Koch Materials provided additional information in regard to the potential emissions from the storage and handling of these acids. This information explaining the acid emissions and a letter of correspondence from the Koch Materials can be found in Appendix A.

The emissions from the natural gas-fired boilers and the natural gas-fired hot-oil heater were calculated based on the maximum firing rate of each emissions unit in order to maximize their operational flexibility. The boilers' and hot-oil heater' total natural gas usage of is required to be recorded on a monthly and annual basis.

The throughput limits of the loading rack are generally unchanged from the Tier II operating permit issued April 4, 1997. The only change was the correction of the maximum heat input to the natural gas boilers and the natural gas hot-oil heater.

2. Modeling

Department staff conducted ambient modeling of the facility's emissions. The emissions from the two natural gas boilers and the hot-oil heater were modeled. The results of the modeling can be found in Appendix B of this technical memorandum.

3. Area Classification

Koch Materials Co., Ada County, Idaho, is located in AQCR 64. The area is classified as nonattainment for CO and attainment or unclassifiable for all other federal and state criteria air pollutants (i.e., PM₁₀, NO_x, VOCs, and SO₂).

4. Facility Classification

The facility is not a designated facility as defined in IDAPA 58.01.01.006.25. The facility is classified as a SM source because it has the potential to emit over 100 T/yr for VOCs, but is limited through permit requirements to 79 T/yr.

5. Regulatory Review

The facility is subject to the following permitting requirements:

- | | | |
|----|---------------------------------|--|
| a. | <u>IDAPA 58.01.01.401</u> | Tier II Operating Permit |
| b. | <u>IDAPA 58.01.01.403</u> | Permit Requirements for Tier II Sources |
| c. | <u>IDAPA 58.01.01.404.01(c)</u> | Opportunity for Public Comment |
| d. | <u>IDAPA 58.01.01.404.04</u> | Authority to Revise or Renew Operating Permits |
| e. | <u>IDAPA 58.01.01.406</u> | Obligation to Comply |
| f. | <u>IDAPA 58.01.01.470</u> | Permit Application Fees for Tier II Permits |
| g. | <u>IDAPA 58.01.01.625</u> | Visible Emission Limitation |
| h. | <u>IDAPA 58.01.01.650</u> | General Rules for the Control of Fugitive Dust |
| i. | <u>40 CFR 60 subpart K</u> | Standards of Performance for Storage Vessels for Petroleum Liquids which Construction, Reconstruction, or Modification commenced after May 18, 1978, and prior to July 23, 1984 |
| j. | <u>40 CFR 60 subpart Kb</u> | Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, and Modification Commenced after July 23, 1984 |

6. Permit Condition Summary

Permit Condition 2 contains the facility-wide general requirements. These are conditions that apply to facility operations that may generate fugitive dust, odors and opacity at stack outlets. The facility-wide conditions also contain instructions on how to properly conduct monitoring and recordkeeping at the facility and where to submit required reports.

Permit conditions 3.1 through 3.5 cover the requirements for the storage tanks at the facility. Permit conditions 4.1 through 4.3 cover the two natural gas boilers and the hot oil heater, and permit conditions 5.1 through 5.5 cover the loading racks where materials are dispensed to trucks for shipment.

Permit Condition	Purpose for the Condition
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- | | |
|-----|---|
| 3.2 | The emission limits were based on the evaluated limit placed in the first Tier II operating permit issued April 4, 1997. |
| 3.3 | In determining an emission limit, it must first be determined what generates the emission. In the case of Koch Materials the various materials used determine the combined VOC emissions for the facility. Each type of material used that has a significant emission needs to be listed with the annual amount handled for that type of material. This data will allow the compliance officer to determine if the facility is operating below the emission levels stated in the appendix of the permit. In this permit both the type of material and the annual usage of each type of material are listed. |
| 3.4 | Permit condition 3.4 establishes the recordkeeping requirements of the material limits described in condition 3.3. The facility must monitor each material throughput and record the monthly gallons |
| 3.5 | Because of the size and date of installation of several tanks at the facility, these tanks are subject to the New Source Performance Standards (NSPS) of 40 CFR Part 60. These standards require the operator or owner of the NSPS affected sources to perform various notifications and recordkeeping for each of the applicable tanks. The permit outlines which tanks are applicable and the reasons they fit the NSPS applicability standards. |
| 4.2 | These are the potential and permitted emissions for the two boilers and hot oil heater at the facility. There are no alternative fuels permitted for these sources. |
| 4.3 | The emission limits of condition 4.2 were evaluated on a specific amount of fuel that could be combusted. Since the emissions are based on fuel usage, the permit sets a fuel usage limit for ensuring compliance with the emission limit. Thus the facility has to maintain a record of the annual amounts of natural gas fuel burned at the facility. |
| 5.2 | The loading rack emission limits were based on the limits placed in the first Tier II operating permit issued April 4, 1997. These emissions were evaluated using a program called Tanks. The facility stated that the present operation doesn't exceed the original emission limits of the previous permit for the loading racks, therefore, these limits remained unchanged. |
| 5.3 | Monitoring and recordkeeping requirements for the limits in condition 5.2. |

Permit condition 6 establishes the allowable emission rate limits at the facility. Permit condition 7 contains the general provisions for Tier II permits.

7. AIRS

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP ^c	PSD ^d	NSPS ^e (Part 60)	NESHAP ^f (Part 61)	MACT ^g (Part 63)	TITLE V	AREA CLASSIFICATION A - Attainment U - Unclassifiable N - Nonattainment
POLLUTANT							
SO ₂ ^h	B						Unclassified
NO _x ⁱ	B						Unclassified
CO ^j	B						Nonattainment
PM ₁₀ ^k	B						Unclassified
PT (Particulate) ^l	B						Unclassified
VOC ^m	SM		SM			SM	Unclassified
THAP (Total HAPs) ⁿ	SM						
			APPLICABLE SUBPART				
			Subpart K				
			Subpart Kb				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

FEES

A Tier II operating permit processing fee is required to be paid in accordance with IDAPA 58.01.01.407. The applicant will be notified in writing of the fee amount upon issuance of a final permit.

RECOMMENDATIONS

Based on the review of the application materials and all applicable state and federal

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APPENDIX A
SUMMARY OF THE POINT SOURCES

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Fuel Burning Equipment

1. Boiler No.1 – Natural gas fired with a maximum rated capacity of 16.74MMBTU/hr. The boiler was constructed in 1975 and it is not a NSPS source.

Boiler Specifications:

Manufacturer:	Kewanee
Model:	H3S-400-GO
Max. Hourly Combustion Rate:	15.9×10^3 SCF/hr
Fuel:	Natural Gas
Secondary Fuel:	None

Stack Design Specifications:

Height:	24 Feet
Exit Diameter:	2.0 Feet
Exit Gas Flow Rate:	Unknown
Exit Temperature:	400°F

2. Boiler No.2 – Natural gas fired with a maximum rated capacity of 16.74MMBTU/hr. The boiler was constructed in 1975 and it is not a NSPS source.

Boiler Specifications:

Manufacturer:	Kewanee
Model:	H3S-400-GO
Max. Hourly Combustion Rate:	15.9×10^3 SCF/hr
Fuel:	Natural Gas
Secondary Fuel:	None

Stack Design Specifications:

Height:	24 Feet
Exit Diameter:	2.0 Feet
Exit Gas Flow Rate:	Unknown
Exit Temperature:	400°F

3. Hot Oil Heater – Natural gas fired with a maximum rated capacity of 14.5MMBRU/hr. The heater was constructed in 2001.

Hot Oil Heater Specifications:

Manufacturer:	American
Model:	AHE-1200
Max. Hourly Combustion Rate:	13.8×10^3 SCF/hr
Fuel:	Natural Gas
Secondary Fuel:	None

Stack Design Specifications:

Height:	24 Feet
Exit Diameter:	2.0 Feet
Exit Gas Flow Rate:	Unknown
Exit Temperature:	400°F

Storage Tanks

Tank No.1- Fixed roof tank with a rated capacity of 2,121,077 gallons. The tank was installed in 1991 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the regulation due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

TankNo.1 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	2,121,007gallons

Tank No.2- Fixed roof tank with a rated capacity of 1,070,821 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

TankNo.2 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	1,070,821gallons

Tank No.4, No.5, No.6, No.7, No.9, No.17 - Fixed roof tank with a rated capacity of 105,760 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.4, No.5, No.6, No.7, No.9, No.17 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	105,760 gallons

Tank No.8- Fixed roof tank with a rated capacity of 50,000 gallons. The tank was installed in 1980 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. This tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cutback except for § 60.116b, a & b.

TankNo.8 Specifications:

Material Handling:	Asphalt Cutback
Tank Type:	Fixed Roof
Tank Capacity:	50,000 gallons

Tank No.10- Fixed roof tank with a rated capacity of 13,514 gallons. The tank was installed in 1985 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. This tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cutback except for § 60.116b, a & b.

TankNo.8 Specifications:

Material Handling:	Naphtha
Tank Type:	Fixed Roof
Tank Capacity:	13,514 gallons

Tank No.12 - Fixed roof tank with a rated capacity of 49,384 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.12 Specifications:

Material Handling:	Asphalt Cutback
Tank Type:	Fixed Roof
Tank Capacity:	49,384 gallons

Tank No.13 - Fixed roof tank with a rated capacity of 105,760 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.13 Specifications:

Material Handling:	Asphalt Cutback
Tank Type:	Fixed Roof
Tank Capacity:	105,760 gallons

Tank No.14 - Fixed roof tank with a rated capacity of 49,384 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.14 Specifications:

Material Handling:	Naphtha
Tank Type:	Fixed Roof
Tank Capacity:	49,384 gallons

Tank No.15 - Fixed roof tank with a rated capacity of 49,384 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.15 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	49,384 gallons

Tank No.16 - Fixed roof tank with a rated capacity of 79,384 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.16 Specifications:

Material Handling:	Asphalt Cutback
Tank Type:	Fixed Roof
Tank Capacity:	79,384 gallons

Tank No.18, No.20, No.22, No.23, and No.24 - Fixed roof tank with a rated capacity of 49,384 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.18, No.20, No.22, No.23, and No.24 Specifications:

Material Handling:	Asphalt Emulsion
Tank Type:	Fixed Roof
Tank Capacity:	49,384 gallons

Tank No.19 - Fixed roof tank with a rated capacity of 38,074 gallons. The tank was installed in 1975 and is not a NSPS source.

Tank No.19 Specifications:

Material Handling:	Asphalt Emulsion
Tank Type:	Fixed Roof
Tank Capacity:	38,074 gallons

Tank No.21 - Fixed roof tank with a rated capacity of 67,686 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.21 Specifications:

Material Handling:	Asphalt Emulsion
Tank Type:	Fixed Roof
Tank Capacity:	67,686 gallons

Tank No.25 - Fixed roof tank with a rated capacity of 59,261 gallons. The tank was installed in 1975 and is a NSPS source. The tank is subject to 40 CFR 60 subpart K.

Tank No.25 Specifications:

Material Handling:	Asphalt Emulsion
Tank Type:	Fixed Roof
Tank Capacity:	59,261 gallons

Tank No.26 and No.27 - Fixed roof tank with a rated capacity of 30,083 gallons. The tank was installed in 1975 and is not a NSPS source.

Tank No.26 and No.27 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	30,083 gallons

Tank No.28 - Fixed roof tank with a rated capacity of 24,066 gallons. The tank was installed in 1975 and is not a NSPS source.

Tank No.28 Specifications:

Material Handling:	No.1 Fuel Oil
Tank Type:	Fixed Roof
Tank Capacity:	24,066 gallons

Tank No.29 - Fixed roof tank with a rated capacity of 21,328 gallons. The tank was installed in 1985 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of No.2 fuel oil except for § 60.116b, a & b.

Tank No.29 Specifications:

Material Handling:	No.2 Fuel Oil
Tank Type:	Fixed Roof
Tank Capacity:	21,328 gallons

Tank No.38 - Fixed roof tank with a rated capacity of 4,220,061 gallons. The tank was installed in 1995 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

Tank No.38 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	4,220,061 gallons

Tank No.39 - Fixed roof tank with a rated capacity of 12,000 gallons. The tank was installed in 1997 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of No.2 fuel oil except for 40 CFR 60.116b, a & b.

Tank No.39 Specifications:

Material Handling:	No.2 Diesel Oil
Tank Type:	Fixed Roof
Tank Capacity:	12,000 gallons

Tank No.46 - Fixed roof tank with a rated capacity of 6,000 gallons. The tank was installed in 2000 and is a not NSPS source.

Tank No.46 Specifications:

Material Handling:	Polyphosphoric Acid
Tank Type:	Fixed Roof
Tank Capacity:	6,000 gallons

Tank No.48 - Fixed roof tank with a rated capacity of 192,500 gallons. The tank was installed in 2000 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

Tank No.48 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	192,500 gallons

Tank No.49 - Fixed roof tank with a rated capacity of 1,322,000 gallons. The tank was installed in 2001 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

Tank No.49 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	1,322,000 gallons

Tank No.50 - Fixed roof tank with a rated capacity of 1,322,000 gallons. The tank was installed in 2001 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

Tank No.50 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	1,322,000 gallons

Tank No.51 - Fixed roof tank with a rated capacity of 58,100 gallons. The tank was installed in 2001 and is a NSPS source. The tank is subject to 40 CFR 60 subpart Kb. The tank will not be regulated by the requirements due to the low true vapor pressure of asphalt cement except for § 60.116b, a & b.

Tank No.51 Specifications:

Material Handling:	Asphalt Cement
Tank Type:	Fixed Roof
Tank Capacity:	58,100 gallons

Loading Racks

Loading Rack No.1 and No.2 – Asphalt Cement loading arm. These racks were installed in 1975.

Loading Rack Specifications

Material Handling:	Asphalt Cement
Type of Loading:	Over head loading – splash fill, normal service
Total Annual Throughput:	50,000,000 gallons

Loading Rack No.3 – Asphalt Cutback loading arm. This rack was installed in 1975.

Loading Rack Specifications

Material Handling:	Asphalt Cutback
Type of Loading:	Over head loading – splash fill, normal service
Total Annual Throughput:	15,000,000 gallons

Loading Rack No.4 and No.5 – Asphalt Emulsion loading arm. These racks were installed in 1975.

Loading Rack Specifications

Material Handling:	Asphalt Emulsion
Type of Loading:	Over head loading – splash fill, normal service
Total Annual Throughput:	50,000,000 gallons

Minor Source:

Waste Oil Burner

Manufacturer:	Clean Burn
Model:	CB-85-C
Maximum Capacity:	300,000 BTU/hr

Fugitive Sources:


1. Pumps, valves, and fittings.
2. Paved and Unpaved Roads.

APPENDIX B

MODELING REVIEW FOR KOCH MATERIALS COMPANY - BOISE TERMINAL

MEMORANDUM

TO: Bob Baldwin, Air Quality Engineer, Boise Regional Office

FROM: Kevin Schilling, Air Quality Scientist, State Office of Technical Services 

SUBJECT: Modeling Review for the Koch Materials Company Boise Terminal Tier II Operating Permit Renewal Application; Koch Materials Company, Boise, Idaho

DATE: May 15, 2002

1. SUMMARY:

Koch Materials Company (Koch Materials) submitted an application for a Tier II operating permit renewal (permit No. 019-00036) for their Boise Terminal facility. The application was received by the Department of Environmental Quality (DEQ) on March 14, 2002, and was declared complete on May 7, 2002. Facility-wide modeling was submitted with the Tier II OP application to demonstrate that emissions from the facility would not cause or significantly contribute to a violation of an ambient air quality standard, as required by IDAPA 58.01.01.403.02.

DEQ has reviewed the analyses and supporting materials submitted, and has verified that operation of the Koch Materials facility as specified in the Tier II operating permit application will satisfy the requirements of IDAPA 58.01.01.403.02. A review of toxic air pollutant (TAP) emissions and resulting impacts was not conducted to evaluate compliance with IDAPA 58.01.01.161.

2. DISCUSSION:

2.1 Introduction and Regulatory Requirements for Modeling

On March 14, 2002, DEQ received a Tier II operating permit renewal application from Koch Materials for their Boise Terminal facility. The facility is currently regulated under their existing Tier II operating permit (permit No. 019-00036). The primary emission sources at the facility include storage tanks, loading racks, boilers, and a hot oil heater.

Per IDAPA 58.01.01.403, no Tier II operating permit can be granted unless the applicant demonstrates to the satisfaction of DEQ that emissions from the facility "would not cause or significantly contribute to a violation of any ambient air quality standard." Atmospheric dispersion modeling was performed by the applicant's consultant, Trinity Consultants (Trinity), to fulfill these requirements.

2.2 Applicable Air Quality Impact Limits and Required Analyses

The Koch Materials facility is located in Ada County, designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and lead (Pb). The area is nonattainment for carbon monoxide (CO). The classification for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀) is not determined; however, it has been decided by the DEQ Boise Regional Office that the area will be treated as unclassified for PM₁₀ for minor sources and minor modifications.

If estimated maximum ambient air impacts from the emission sources at the facility exceed the "significant contribution" levels of IDAPA 58.01.01.006.93, then DEQ modeling guidance requires a full impact analysis. A full impact analysis for attainment area pollutants requires adding ambient impacts from facility-wide emissions to a DEQ approved background concentration value that is appropriate for each criteria pollutant at the facility location. The resulting maximum ambient air concentration is then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 1. Table 1 also specifies the modeled value that must be used for comparison to the NAAQS. Acceptable levels of

emissions and corresponding ambient impacts for nonattainment area pollutants are evaluated during the development of the State Implementation Plan (SIP) for that area. Therefore, facility-wide modeling results for CO are evaluated against significant contribution concentrations as a screening level analysis only. If impacts exceed the significant contribution concentration, then further analyses may be conducted in accordance with provisions of the SIP.

Table 1. Applicable Regulatory Limits

Pollutant	Averaging Period	Regulatory Limit ^a ($\mu\text{g}/\text{m}^3$) ^b	Modeled Value Used ^c
NO ₂	Annual	100 ^d	1 st highest
SO ₂	3-hour	1,300 ^d	2 nd highest
	24-hour	365 ^d	2 nd highest
	Annual	80 ^e	1 st highest
CO	1-hour	Nonattainment	2 nd highest
	8-hour	Nonattainment	2 nd highest
PM ₁₀	24-hour	150 ^d	6 th highest
	Annual	50 ^e	1 st highest

a. IDAPA 58.01.01.577

b. Micrograms per cubic meter

c. When using five years of meteorological data

d. Not to be exceeded more than once per year

e. Not to be exceeded

An ambient air assessment of TAP impacts was not performed for the facility to demonstrate compliance with IDAPA 58.01.01.161. DEQ determined that the magnitude and nature of TAP emissions and the proximity of the facility to potential offsite public adequately demonstrated compliance with IDAPA 58.01.01.161.

2.3 Background Concentrations

Applicable background concentrations are shown in Table 2. Background concentrations used for the Koch Materials Tier II operating permit application were provided by DEQ to Trinity. Background PM₁₀ concentrations were obtained from monitoring data collected in Boise, Idaho. Statewide background concentrations were used for all other criteria pollutants.

Table 2. Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$) ^a
NO ₂	Annual	40
SO ₂	3-hour	374
	24-hour	120
	Annual	18.3
CO	1-hour	NA (non-attainment area)
	8-hour	NA (non-attainment area)
PM ₁₀	24-hour	123
	Annual	34.6

a. Micrograms per cubic meter

2.4 Modeling Impact Assessment

The ambient air impact analysis was performed by Trinity using the model ISCST3 - Version 00101. A modeling protocol was submitted to and approved by DEQ prior to the Tier II operating permit application. DEQ conducted verification modeling using ISCST3 - Version 02035; Table 3 provides a summary of the modeling parameters used for the DEQ analysis. Trinity originally used a receptor grid of 100 meters spacing out to 2,000 meters from the facility fenceline, and a coarse grid of 500

meters spacing out to 5,000 meters from the fenceline. DEQ refined this grid during model verification to the values specified in Table 3. This adjustment was made to provide greater assurance that areas of maximum concentrations were identified.

Table 3. Modeling Parameters

Parameter	Description/Values	Documentation/Additional Description
Model	ISCST3	Version 00101
Meteorological Data	Boise, Idaho	1987-1991 Files: Boise87.met; Boise88.met; Boise89.met; Boise90.met; Boise91.met
Model Options	Regulatory Default	
Land Use	Rural	Based on population density and actual land use.
Terrain	Simple and Complex	Elevation data from digital elevation model (DEM) files File: ce24316.XYZ
Building Downwash	Used building profile input program (BPIP)	Building dimensions obtained from modeling files submitted.
Receptor Grids (See Figure 1)	Grid 1	25 meters spacing along site boundary out to 20 meters.
	Grid 2	50 meters spacing out to 500 meters.
	Grid 3	100 meters spacing out to 1,500 meters.
Facility Location (UTM)	E	565.6 kilometers
	N	4,823.5 kilometers

Emissions from the facility occur from two natural gas-fired boilers and a hot oil heater. Emissions of volatile organic compounds (VOC) also occur from oil tanks and loading racks. These emissions were not included in the dispersion modeling analyses because there are no applicable VOC ambient air quality standards. Tables 4 and 5 provide emission quantities and other emission parameters. Stack location, stack height, stack diameter, stack gas temperature, and stack gas flow rate were provided by Trinity. A stack gas exit velocity of 0.0001 meters per second (m/sec) was used for modeling because a rain cap is present on the stack.

Table 4. Potential Pollutant Emission Rates

Source	Maximum Hourly Emission Rate ^a pounds per hour (lb/hr)				Annual Emission Rate ^b tons per year (t/yr)			
	PM ₁₀	SO ₂	NO _x ^c	CO	PM ₁₀	SO ₂	NO _x	CO
Boiler 1 (B1)	0.104	0.0083	1.37	1.15	0.46	0.04	6.01	5.05
Boiler 2 (B2)	0.104	0.0083	1.37	1.15	0.46	0.04	6.01	5.05
Hot Oil Heater (H1)	0.089	0.0071	1.18	0.99	0.39	0.03	5.15	4.33

a. Emission rate used for 24-hour, 8-hour, 3-hour, and 1-hour averaging periods

b. Emission rate used for annual averaging period – continual operation

c. Oxides of nitrogen

Table 5. Emission and Stack Parameters

Source / Location	Source Type	Stack Height (m) ^a	Stack Diameter (m)	Stack Gas Temp. (K) ^b	Stack Gas Flow Velocity (m/sec)
Boiler 1 (B1)	Point	7.3	0.61	478	0.0001
Boiler 2 (B2)	Point	7.3	0.61	478	0.0001
Hot Oil Heater (H1)	Point	3.7	0.61	478	0.0001

a. Meters

b. Kelvin

Building and tank dimensions provided in the building profile input program (BPIP) file were compared against the scaled plot plan and the effect of buildings and tanks on plume downwash was included in the analysis.

A significant impact analysis was initially performed to determine if emissions from the facility would "significantly contribute" to pollutant concentrations in ambient air, as per IDAPA 58.01.01.006.93. A full impact analysis was then performed for those pollutants emitted from the facility that were estimated to have an ambient impact exceeding "significant contribution" levels. The full impact analysis involved modeling impacts from the facility's emissions and adding those impacts to background concentrations.

3. MODELING RESULTS:

Modeled ambient air impact results from the significant impact analysis are provided in Table 6 for facility-wide emissions. The values reported in this memorandum were obtained from DEQ verification modeling. These values are not substantially different from those obtained by Trinity. However, it was conservatively assumed that 100% of NO_x was NO₂. Because the potential ambient impact of the facility-wide emissions exceeds "significant contribution" levels for annual NO₂, annual PM₁₀, 24-hour PM₁₀, and 1-hour CO, a full impact analysis was performed for those pollutants and averaging times.

Table 6. Significant Impact Analysis for Criteria Pollutants (Facility-wide Emissions).

Pollutant	Averaging Period	Ambient concentration (µg/m ³) ^c	Significant Contribution ^a (µg/m ³)	Full Impact Analysis Required (Y or N)
NO ₂	Annual	54	1.0	Y
SO ₂	3-hour	7.1	25	N
	24-hour	1.45	5	N
	Annual	0.34	1.0	N
CO	1-hour	2,602	2,000	Y
	8-hour	483	500	N
PM ₁₀	24-hour	18.4	5.0	Y
	Annual	4.3	1.0	Y

^{a, b.} Significant contribution level as per IDAPA 58.01.01.006.93

^{c.} 1st highest modeled value

Results of the full impact analysis are presented in Table 7 and indicate that operation of the facility as described in the Tier II operating permit application will not cause or significantly contribute to a violation of an applicable NAAQS. Figures 2 and 3 show the maximum-modeled PM₁₀ 24-hour averaged concentration impacts and NO_x annual averaged concentrations, respectively. Because the facility is located in a nonattainment area for CO, there are no appropriate background concentrations. However, the maximum ambient 1-hour CO impact of 2,313 µg/m³ from the facility is well below the CO NAAQS of 40,000 µg/m³.

Electronic copies of the modeling analysis are saved on disk. Table 8 provides a summary of the files used in the modeling analysis. Robert Baldwin has reviewed this modeling memo to ensure consistency with the Tier II operating permit and technical memorandum.

Table 7. Full Impact Analysis for Criteria Pollutants (Facility-wide Emissions).

Pollutant	Averaging Period	Ambient Conc. ($\mu\text{g}/\text{m}^3$) ^a	Background Conc. ($\mu\text{g}/\text{m}^3$)	Total Ambient Conc. ($\mu\text{g}/\text{m}^3$)	Regulatory Limit ^b ($\mu\text{g}/\text{m}^3$)	Compliant (Y or N)
NO ₂	Annual	57 ^c	40.0	97	100	Y
PM ₁₀	24-hour	15.1 ^d	123	138	150	Y
	Annual	4.3 ^c	34.6	38.9	50	Y
CO	1-hour	2,313	NA	NA	NA	NA

^a. Concentration in micrograms per cubic meter

^b. IDAPA 58.01.01.577

^c. 1st highest modeled value

^d. 6th highest modeled value

Table 8. Dispersion Modeling Files

Type of File	Description	File Name
Met Data	1987-1991 consistent with DEQ data	Boise87.met; Boise88.met; Boise89.met; Boise90.met; Boise91.met; Boi87_91.met
BEEST Input Files	Facility 24-hour and less	Koch24hr.BST
	Test Stand only annual for each of five years	KochAnnualYY.BST (YY = year 87 – 91)
Each BST file has the following type of files associated with it:		
Input file for BPIP program		.PIP
BPIP output file		.TAB
Concise BPIP output file		.SUM
BEE-Line file containing direction specific building dimensions		.SO
ISCST3 input file for each pollutant		.DTA
ISCST3 output list file for each pollutant		.LST
User summary output file for each pollutant		.USF
Master graphics output file for each pollutant		.GRF
Some modeling files have the following type of graphics files associated with them:		
Surfer data file		.DAT
Surfer boundary file		.BLN
Surfer post file containing source locations		.TXT
Surfer plot file		.SRF

KS

G:\TECHNICAL SERVICES\MODELING\SCHILLING\KOCH\MODELING TECH MEMO.DOC

Figure 1 - Koch Materials Tier II Operating Permit Ambient Air Impacts

Receptors used for Dispersion Modeling

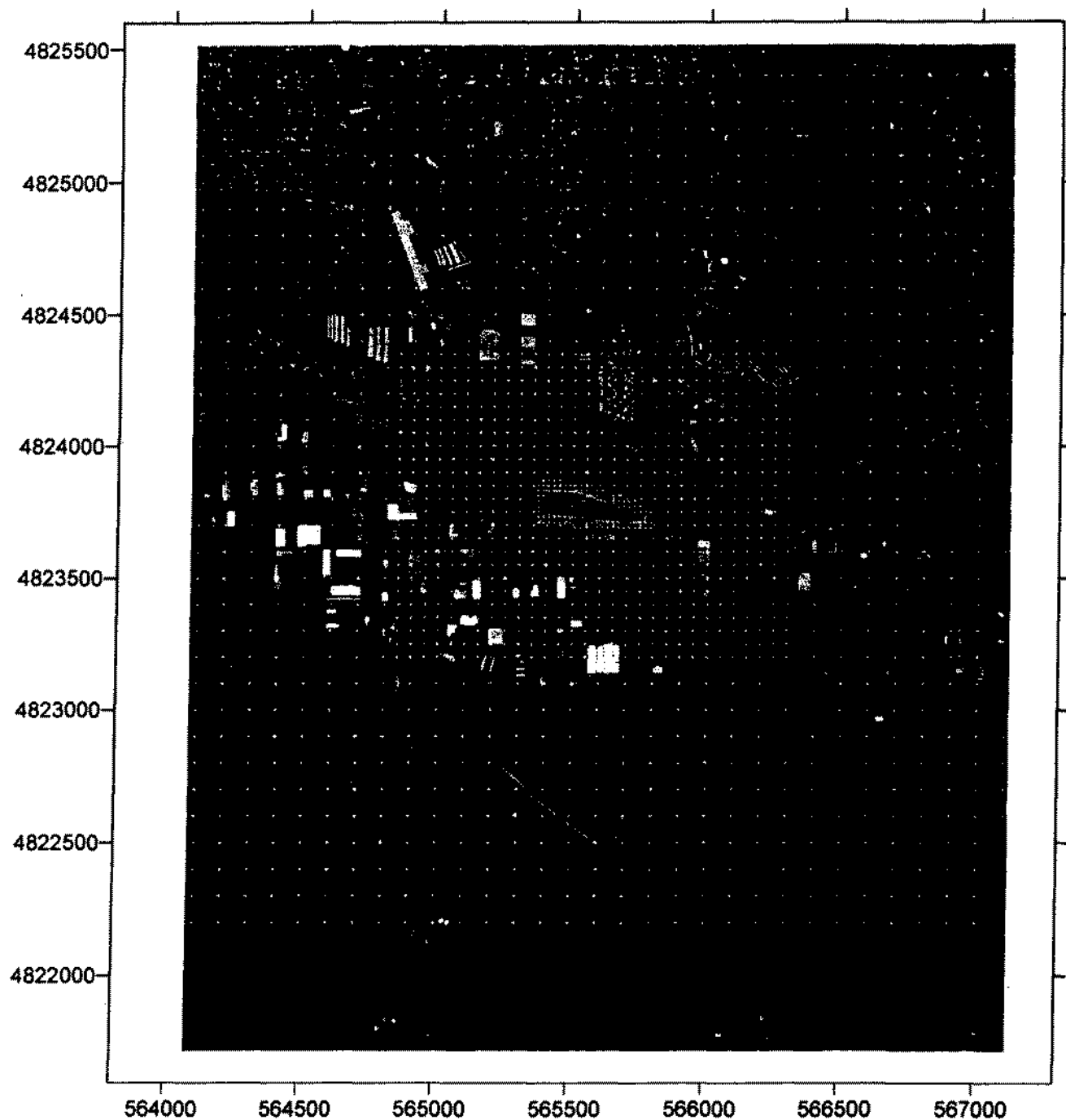


Figure 2 - Koch Materials Tier II Operating Permit Ambient Air Impacts

6th Highest 24-Hr PM-10 Impact (Including Background of 123 ug/m3)

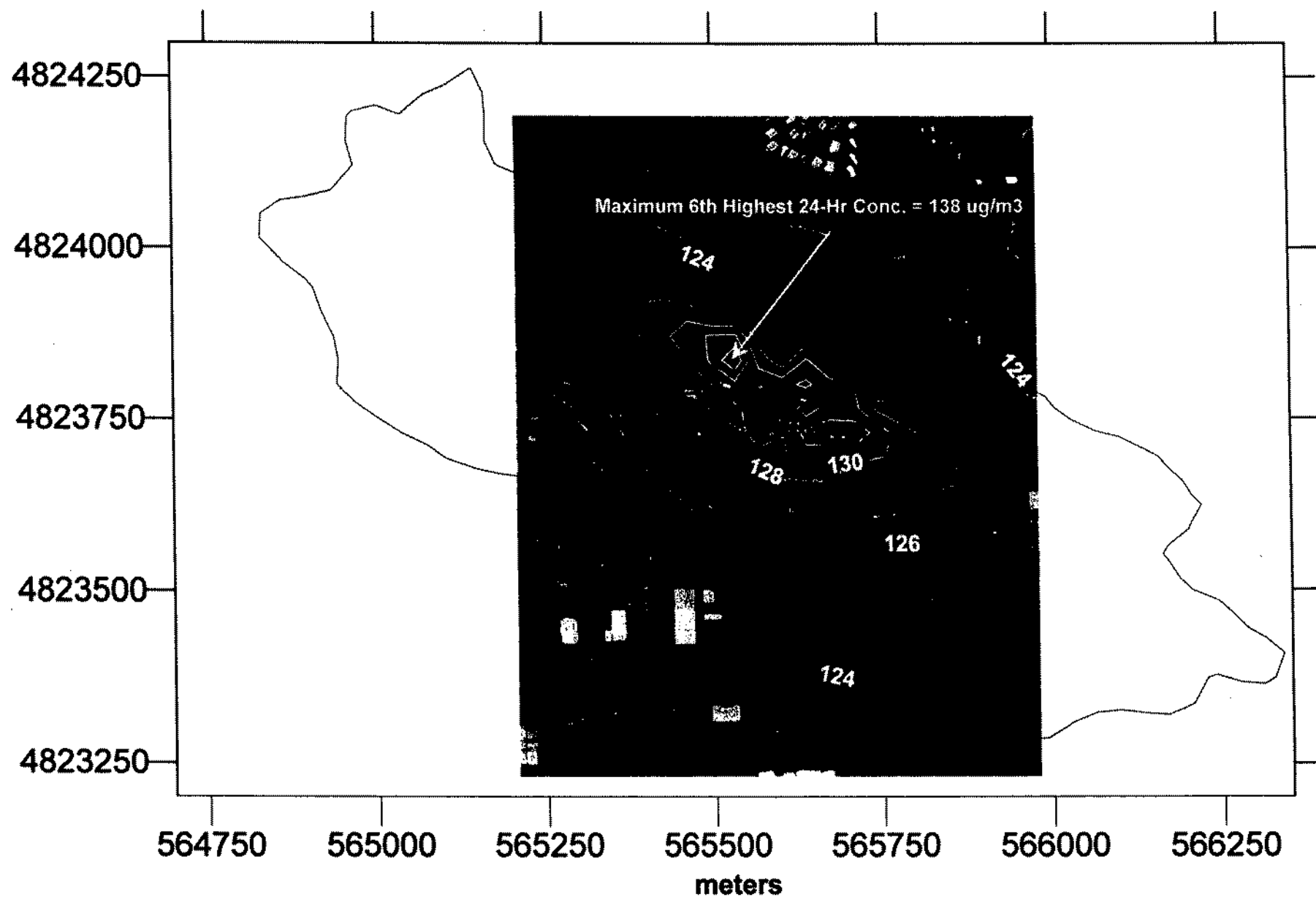
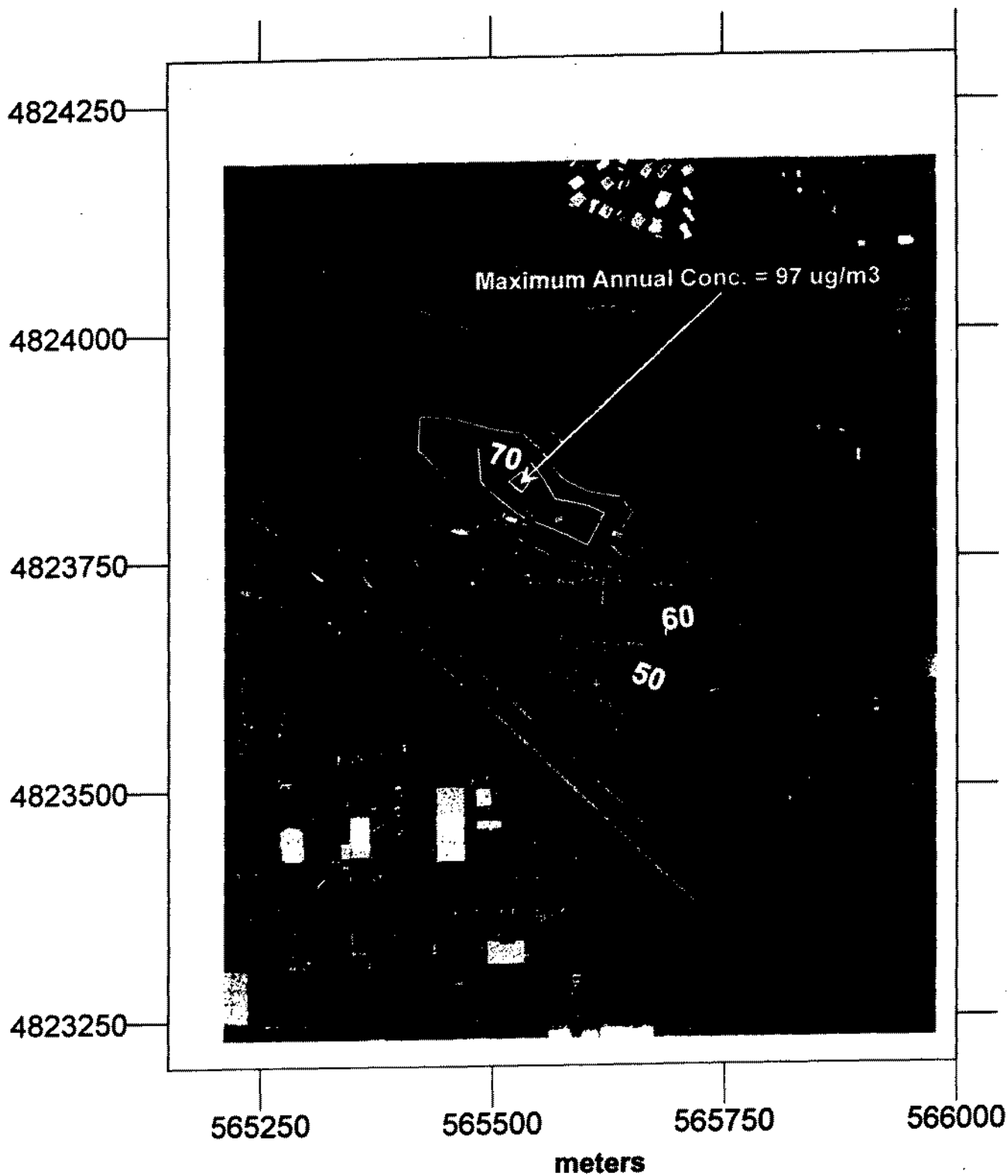


Figure 3 - Koch Materials Tier II Operating Permit Ambient Air Impacts

Maximum Annual NO₂ Impact (Including Background of 40 ug/m³)



APPENDIX C
RESPONSE TO PUBLIC COMMENTS

March 14, 2003

**STATE OF IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY
RESPONSES TO COMMENTS AND QUESTIONS
SUBMITTED DURING A PUBLIC COMMENT PERIOD
FOR THE PROPOSED TIER II OPERATING PERMIT
FOR KOCH MATERIALS COMPANY**

Introduction

The public comment period for the proposed Tier II Operating Permit of Koch Materials Company a Boise facility for the production of asphalt, asphalt emulsions, and asphalt cutback was held from January 23, 2003 to February 24, 2003. Comment packages were made available at the state office of Idaho Department of Environmental Quality (DEQ) in Boise, the DEQ Regional Office in Boise, and the Boise Public Library. The comment package consisted of Koch Materials Company's proposed Tier II operating permit, and the accompanying Technical Analysis.

Koch Materials Company responded with the following comments:

Comment 1

The responsible official has changed from Thomas DeLorbe to J. Shane Bailey.

Response to Comment 1

The change was made to the permit.

Comment 2

Permit Condition 4.3 is unclear. The cumulative maximum operating capacity of the facility's two boilers and hot oil heater is 47.98 MM BTU/h. Based on this operating capacity and heat content of 1050 Btu/scf, the throughput limits of 401 million scf/yr and 4.21 million therms/yr. Additionally, the two sentences with this permit condition as contradictory. KMC request that the first sentence be updated to reflect the above scf/yr and therms/yr values and the second be removed from this permit.

Response to Comment 2

The changes were made to the permit.

APPENDIX D

TIER II FEE

Tier II Fee Calculation

Instructions:

Insert the following information and answer the following questions either Y or N.
Insert the permitted emissions in tons per year into the table. TAPS only apply
when the Tier II is being used for New Source Review.

Company: Koch Materials Company
Address: 4303 Gekeler Lane
City: Boise
State: Idaho
Zip Code: 83716
Facility Contact: Dwayne Gibson
Title: Plant Manager
AIRS No.: 001-00049

N

Did this permit meet the requirements of
IDAPA 58.01.01.407.02 for a fee
exemption Y/N?

N

Does this facility qualify for a general
permit (i.e. concrete batch plant, hot-mix
asphalt plant)? Y/N

Y

Is this a synthetic minor permit? Y/N

NO _x	20.6
PM ₁₀	1.6
PM	0.0
SO ₂	0.1
CO	17.3
VOC	78.7
HAPS/TAPS	
Total:	118.3
Fee Due	\$ 10,000.00

Comments: